Additional Comments
RM 10.9 Time-Critical Removal Action, Basis of Design Report and Permitting Concerns

I. Additional comments that should be incorporated into the 90% design

1. Please prepare revised figures showing the sediment concentrations of contaminants in all sampling locations both within and just outside of the RM 10.9 Removal Area, including results obtained prior to the RM 10.9 investigation and those obtained after the signing of the RM 10.9 AOC to refine the extent of the Removal Area. The following contaminants should be included on these figures: 2,3,7,8-TCDD, Total PCBs, and mercury. A set of figures should be prepared for each of the following depth layers: 0 to 6", 6" to 1.5", 1.5" to 2.5", and 2.5" to 3.5". These figures should be included in Section 3.4 (or its equivalent in the 90% design). Updated tables with the additional information should be included, and a map showing all sample locations identified by symbol or color, per program it was generated from, should also be included.

2. Section 1.2, page 1-2 - The objective should be revised from "determine potential impacts of dredging contaminated sediment on surface waters and the means, if feasible, to minimize these impacts" to "determine potential impacts of dredging contaminated sediment on surface waters and the means to minimize, or otherwise address, these impacts."

3. Section 1.2, page 1-2 - In addition, a more general objective of the project should be to identify and minimize/address potential impacts to the environment and public health.

4. Section 3.6 - Wind direction and speed from Newark Airport are not generally applicable along the River where winds follow a more site-specific course and speed. A meteorological station is recommended during dredging work in the event of odor complaints, etc.

II. Additional comments received which EPA anticipates will be addressed in the pre-final design, either directly, or indirectly through the inclusion of details that were not provided in the BODR. These comments are being provided for CPG's information.

1. The report should include a section which summarizes the results for the bathymetry surveys performed since 2008 in this section of the river. Recent riverbed elevation/contour information (i.e., the past several years) is critical for capping design and necessary long term monitoring and maintenance of the cap.

2. It appears that the BODR underestimates the potential for the proposed Removal Action to result in the resuspension and dispersal of substantial quantities of contaminated sediment from the project area. Given the shallow water depths present in the project area, it may be very difficult to operate and move the proposed dredging equipment and ancillary equipment (tugs, barges) without disturbing bottom sediments. In addition, it is not known if the proposed environmental clamshell bucket can actually work as designed/intended in such shallow water. In many ways, the BODR approaches the dredging component of the proposed Removal Action more as a "typical" dredging operation as opposed to the "environmental dredging" of very contaminated sediment.

3. Cap performance criteria have not yet been established. These criteria are needed in order to plan and implement the testing and evaluation needed to design the cap. The term "suitably protective cap design" should be clearly defined in terms of the intended design goals of the Removal Action and the anticipated duration of cap containment functionality. In addition, similar to the potential difficulties during the dredging operation, placement of the cap in such shallow waters has the potential to result in the resuspension and dispersal of substantial quantities of contaminated sediment from the project area.

4. The application of activated carbon/organo clay active caps is a relatively new technology. Concerns exist that the active layer may require reactivation to maintain effectiveness as a long-term contaminant containment barrier. The armor/stone layer proposed to be placed on top of the active cap will interfere with replenishment of the active zone. The duration and ability to maintain the cap considering the armor should be further addressed.

5. Text and design drawings should identify the depths of known or suspected elevations of the underground utilities in the study area and describe how these will be addressed.

6. Both a Site and a Community HASP should be included in the design documents.

7. Clarification on the duration of O&M and responsibility for O&M will be needed.

8. In addition to the items listed in Section 4.3 of the RAWP, the TCRA Final Report should also include as-built drawings of the cap and any related infrastructure (temporary and/or permanent) across the TCRA study area, to show cap features relative to underlying contaminated sediment, and descriptions of same, to document the actions taken. This information will supplement the initial site characterization information requested in Comment I.1 above for the purposes of long term monitoring and maintenance.

9. a. Section 1.3.1, page 1-2 - Since the Removal Area includes an area located above low tide, will these sediments be dredged while under water and/or exposed to the air? This may require the use of different equipment, varying environmental and public health impact management measures, and different dredged material handling procedures at a dredged material processing facility (to address varying quantities of free water).

b. Given the shallow water depths in a significant portion of the Removal Area, potential impacts of the dredging operation could be very different from those conducted in deeper water.

10. Section 2.1 - The material used for capping purposes should be demonstrated to be "clean". For example, a TBC could be used such that the capping material must not contain any contaminants above the Effects Range-Low (ER-L) concentrations, or literature-based background levels for contaminants not assigned an ER-L value.

11. Table 2-2, Potential Action Specific ARARs

a. In addition to the surface water quality standards mentioned in this section (turbidity, dissolved oxygen and "various" toxic substances), review of sediment contaminants is needed to identify key contaminants of concern for potential monitoring. It is noted that Section 4 identifies 2,3,7,8-TCDD, PCBs and mercury as target chemicals. This may ultimately be acceptable; however, given the large suite

of compounds in the study area, justification should be presented for why these 3 contaminants adequately represent the contaminant categories present.

b. Federal Clean Air Act and NJDEP Air Toxics Program – For both entries, the table indicates that because the sediment will be removed "in the wet", no adverse air emissions are expected. This approach is inadequate. Before such a determination is made, an evaluation is needed of chemical constituents/concentrations to be exposed during the TCRA. Chemical concentrations and projected emissions of same based on each aspect of planned project operations must be evaluated more closely.

12. Section 3.5, Hydrodynamics – Figures 3-1 and 3-2 are useful as they represent 100 –yr flow event conditions. To supplement this information (unless provided elsewhere) it would be helpful to include a table listing expected full range flow velocity and water depths under typical regular tidal cycles. This range of information (typical, plus extreme) is important for identifying under what conditions sediment bed impacts may be expected and how these flows may impact the planned dredging and transportation operations. In the 90% design report, this information can aid in identifying the conditions when TCRA operations may need to be modified or suspended temporarily, and planning the contingencies for same.

13. Table 3-2 - The physical characteristics of the sediment in the Removal Area are highly variable. This could impact the dredging operation (and associated impacts) and the stabilization of the dredged material (multiple bench-scale tests may be needed). Although this summary table is useful, appropriate figures showing the distribution of the sediment physical characteristics are needed to design the project.

14. Section 4 - Although no silt curtains are proposed, some means of preventing recreational boats in the work area should be proposed.

15. Section 4.6.1 - Action levels for turbidity should be proposed that would trigger modification of the dredging operations if exceeded.

16. Section 4.3.1.1 - It is proposed to use a 3-5 CY environmental clamshell bucket. What are the physical dimensions of such a bucket compared to the 2 feet dredging depth (i.e. is the bucket too large to function as designed for such a shallow dredging depth? – see Section 4.3.4, page 57, paragraph #3).

17. Section 4.3.1.3 - The barges and associated tugs must be operated to minimize impacts to the underlying sediments (i.e. resuspension and dispersal) in the project area via prop-wash, physical contact, etc. This may limit the river flow conditions and water depths (points in the tidal cycle) during which dredging operations may occur. The dredge production rate (Section 4.3.3) may have to be reexamined.

18. Section 4.3.4, page 4-3, paragraph #2 - In order to dredge the Removal Area "in the wet", the location of the dredge relative to the direction of current flow and tidal height will vary over the course of the tidal cycle, particularly when dredging the shallower portions of the Removal Area. This will require constant repositioning of the dredge in the up/down current direction, and in/out from the shoreline. This repositioning will not only potentially result in the resuspension and dispersal of bottom sediments, but will affect the production rate of the operation.

19. Section 4.3.4, page 4-3, paragraph #4 - Pre-dredging bathymetry should be obtained immediately before the start of the proposed project to improve the accuracy of the dredging operation.

20. Section 4.3.6, River Operation - The list of third parties to coordinate with should also include area schools and boating clubs which use this section of the river for sport and recreational boating.

21. Section 4.4, Resuspension Management –This section describes in general why resuspension of contaminated sediment is not predicted to be of concern and, therefore, why typical re-suspension preventive measures (sheet pile wall, silt curtain) are not planned. However, given the contaminant levels in this mudflat, and the release of sediment that will occur with any dredging operation and other concerns as described in comments 28-30 above, this section should be re-focused to describe the site operations and measures that are planned for controlling and preventing sediment resuspension to the maximum extent possible. Has dry excavation within a sheetpile wall been considered? If so, why is this not proposed? Has in-situ sediment stabilization (either wet or dry) within a sheet pile wall been considered? This would increase the volume of removed material, but greatly reduce potential release of contamination during operations, and eliminate the need for de-watering and/or ex-situ sediment stabilization prior to disposal. Has hydraulic dredging been considered? Excess debris is not expected to be a significant concern for this shallow dredging operation, and, if encountered, could be managed with alternate equipment.
In addition, the NJDEP Dredging Technical Manual (1997) is referenced within this section. Although appropriate, note that this document was mainly intended for uncontaminated or minimally contaminated sediments, not the level of contamination to be addressed at RM 10.9. Therefore, sediment resuspension controls beyond BMPs in the manual need to be considered.

22. Section 4.4.1, Bullet #1 - The transport of suspended sediment from the Removal Area should be modeled under typical and high-flow river conditions. To say such suspended sediment transport will be "reduced" (compared to what?) is not appropriate. This bullet also implies that dredging will only be conducted below a maximum river flow condition. If so, this maximum flow must be specified.

23. Section 4.4.1, Bullet #2 - See Comments #17 and 18 – These activities may result in increased sediment resuspension and dispersal.

24. Section 4.4.1, Bullet #3 - Dissolved and colloidal contaminants associated with sediment pore water will also be dispersed as a result of the dredging operation.

25. Section 4.4.2 - The references cited does not consider dredging operations conducted in areas of shallow water such as the Removal Area. In addition, sediment resuspension may be increased due to barge and tug movements. Thus, assuming that only 1% of the sediment to be dredged will be resuspended is probably an underestimate.

26. Section 4.4.2.2 - The resuspended masses of all the COPCs should be estimated, for a range of resuspended sediment mass (i.e. percentages of the dredged sediment mass - not just 1% - see Comment #35).

27. Section 4.4.4 - Additional justification is needed to support the decision to not use silt curtains. Silt curtains have been effective in controlling sediment dispersal in a variety of projects.

28. Sections 4.4.5 and 4.4.5.1 - The regulatory requirements and BMPs specified in the NJDEP Dredging Manual were designed to address typical maintenance and new work dredging projects, not "environmental dredging" of highly contaminated sediments such as those in the Removal Area. Coastal GP #20 is not applicable to the proposed project. BMPs developed for other environmental dredging projects, including the GE Hudson River project, should be reviewed and included as appropriate in the design report.

29. Section 4.4.6, paragraph #2 - How will turbidity monitoring be protective of water quality regarding concentrations of the COPCs? What level of turbidity will result in adverse impacts to water quality (from the turbidity itself – relative to the applicable surface water quality standards – and from the associated COPC concentrations)?

30. Section 4.4.6, paragraph #3 - Section 4.4.4 states that no benefits will be gained through the use of silt curtains. Thus, how effective will be the use of silt curtains "after the fact" if a turbidity problem is identified through monitoring? Additional BMPs are needed if monitoring indicates that the dredging or capping operations are adversely impacting water quality and these need to be described in this plan.

31. Section 4.5, page 60 - The potential impacts of the dredging operation (and use of the construction staging area) on the adjacent/surrounding Riverside Park complex must be evaluated.

32. Section 4.6.1, Water Quality – For water quality monitoring, further comments will be provided once a sampling plan is proposed in the Pre-Final Design report. However, conceptually, instead of single point monitoring, as currently described, a network of water monitoring stations (i.e., east bank, channel and west bank) are needed for both near and far field, at upstream and downstream locations. A more comprehensive monitoring network is necessary due to the lack of an enclosure or other means to physically control resuspended sediment. In addition, it is recommended that, for the first 2 weeks of dredging, daily monitoring for key project contaminants are performed at the designated sampling stations to potentially correlate with simultaneous and co-located turbidity measurements. This will allow an evaluation of possible turbidity and water chemistry correlations, which, going forward, may allow frequency reduction of chemical monitoring.

33. The following are additional points to consider during development of the surface water monitoring program:

- The up and downstream background monitoring locations must be truly "background" and not impacted by the dredging and capping operations;
- both up- and downstream monitoring locations located between the Removal Area and the background locations are needed to evaluate the potential spatial extent of project impacts. It may be better to use boat transects conducted at multiple specified distances from the project area as opposed to a single fixed station;
- the monitoring program should include an "adaptive management" component to respond to observed data such that it will be possible to add and/or relocate the monitoring locations to better evaluate project impacts to surface water quality;
- the monitoring program must consider the tidal cycle and river flow conditions;
- monitoring should include, at a minimum, at least one representative COPC for each class of COPCs, not just PCBs, 2,3,7,8-TCDD, and mercury;
- monitoring must include measurements of both SS-associated and dissolved concentrations of the COPCs;

- water quality monitoring for the COPCs should be conducted more frequently than once per week. A very fast turn-around time should be required from the analytical laboratories to ensure the COPC concentration data can be used in an adaptive management framework to minimize project impacts; and
- water quality monitoring for the COPCs will require the collection and analysis of large volume samples and the use of state of the art analytical procedures to obtain usable data (i.e. achieved analytical detection limits must be below the applicable surface water quality standards).

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- water quality monitoring for the COPCs will require the collection and analysis of large volume samples and the use of state of the art analytical procedures to obtain usable data (i.e. achieved analytical detection limits must be below the applicable surface water quality standards).

35. Section 4.6.2 - Additional evaluation of potential air quality and odor impacts as a result of the dredging operation are needed.

36. Section 4.6.3 - Noise impacts should be controlled to the maximum extent possible by first identifying the local ordinances which are applicable and identifying recommended noise levels for the more sensitive land use in the area (residential). Site operations should be designed to stay well within these limits.

37. Section 5.8, Section 6.8, (and all other similar sections) Project and Community Health and Safety - Throughout the document, the text focuses on project/occupational HASP concerns. A similar listing of community HASP concerns is needed to form the basis of the forthcoming Community HASP, to be implemented during site operations.

38. Section 6.2.1 - The actual amount of water or supernatant resulting from the dredging operations may be greater than the volume estimated in the report. It is recommended that this section be revised

using the existing % moisture data (average - 50% moisture) to refine the amount of supernatant that will be generated from the project.

39. Section 7.1, last bullet - This should say "whichever is more" at the end, to be conservative.

40. Section 7.2.1 - What are the cap performance criteria? These need to be established before the cap can be designed. In particular, how long must the active layer of the cap (carbon, organoclay) serve its purpose? The "active sites" in such an active layer will eventually become saturated with the COPC, depending on groundwater flow and COPC concentrations, and will thereafter no longer function to cap the underling contaminated sediment.

41. Section 7.2.1.1 - Documentation of the referenced CapSim model should be included in the PreFinal Design report.

42. Table 7-1 - This table does not present a "range of estimated pore water concentrations", but apparently a "maximum" value (see Section 7.2.1.1). However, given the range of TOC in the project area sediments (see Table 3-2), that sediment sample with the highest concentration of a COPC may not have the highest pore water concentration of the COPC (calculated using the EqP method). Also, since bench-scale treatability studies will be conducted for mercury, similar studies should be conducted for the other COPCs to verify that the EqP method results are indeed conservative.

43. Section 7.2.2 - Although large commercial boats are not a concern at RM 10.9, small craft motors/propellers in shallow water impacting the cap, need to be anticipated for cap design. Small boats have been known to become stuck in sediment in this section of the river.

44. Section 7.2.3 - Careful placement of the stone on the geotextile so as not to tear it will be critical. A test section is recommended in the field for experimenting with stone placement and exhuming the geotextile to look for damage.

45. Section 7.3 - A low permeability clay mat would need a means to vent methane which would be expected to build up under it, in the undredged sediments.

46. Section 7.3 - Much of the cap design criteria seems to hinge on short-term treatability studies to determine best mix of materials. However, long term durability/stability issues may not be demonstrated through short term studies. Therefore conservative, worst case, assumptions need to be incorporated in cap design and should be described in this section.

47. Section 7.3, paragraph #1 - NJDOT should not be referenced here.

48. Section 7.3 - This section notes that placement of the cap will result in the consolidation of the underlying sediments. Information should be supplied to demonstrate that the underlying sediments can physically support the final cap.

49. Section 7.5 - BMPs must be developed and implemented to minimize the resuspension and dispersal of contaminated sediment during the cap placement operations.

50. Sections 7.6.2 and 7.6.3 - Site conditions, as noted in 17 and 18, may similarly limit the capping operation.

51. Section 7.8.1, paragraph #2 - This paragraph does not consider the potential resuspension and dispersal of contaminated sediment resulting from the capping operation; also see Comments #17 and #18.

52. Section 7.8.1, paragraph #3 - Additional evaluation of potential air quality and odor impacts as a result of the dredging operation are needed

53. Section 7.10 - A post-capping monitoring program must also be designed and implemented to verify that the cap is performing as intended (i.e. that the not yet developed cap performance criteria are met). This monitoring program must be designed to determine if upwelling groundwater is transporting the COPCs into and through the cap. Re-colonization of the cap by benthos – and the resulting impacts on cap integrity – should be included in this monitoring program.

54. Table 7-4 - The sand specified is very similar to NJDOT, Type I-8 Soil Aggregate, which is typically used as "filter sand." Specifying a soil aggregate that is commonly used, like Type I-8, rather than a custom blend as shown, may be more economical and readily available, if equally dependable for durability.

55. Section 8.2 - With regard to the discussion of data collected/used for initial waste characterization and RCRA applicability, the underlying data used for this purpose needs to be presented and described to show its representativeness of the material to be dredged. At a minimum, a sample summary table, and associated text and map, are needed to: list the samples used for this purpose, describe/depict their locations within the TCRA area, analytical results per sample, analytical methods used, number and identification of samples comprising composite samples, composite sample results, and comparison of data to appropriate regulatory criteria.

56. Section 8.2, paragraph #3 - See Comment #III.4.

III. Comments provided by NJDEP related to the permitting process for the treatment facility, as well as substantive requirements for the dredging, which are being provided to help inform the CPG's upcoming discussions with NJDEP

1. Dredged sediment management pathways considered typical for material classified as "Environmental Media" may be inappropriate based on the levels of dioxin in TCRA material. Further discussion is needed on how this will be managed.

2. It is not clear at this time whether the stabilization facilities being considered for use by the CPG are capable of handling the level of contamination in these sediments effectively without the use of additional controls and the need for decontamination at their plants.

3. Section 1.3.3, page 1-3 - Bench-scale (and potentially pilot-scale) testing of proposed dredged material solidification/stabilization processes will be needed to evaluate the physical and chemical characteristics of the resulting material. Potential air quality concerns with processing the dredged material must also be addressed.

4. Section 2.2, page 2-1, paragraph #6 - In New Jersey, dredged material is not solid waste (although it could be considered a hazardous waste). Complying with the "WQC substantive requirements" (which only address potential impacts to surface water quality) does not exempt dredged material from being classified as a hazardous waste and managed in accordance with all applicable solid waste regulations.

5. Section 6.2, Bullet #3 - The potential need for air quality controls at the dredged material processing facility must also be investigated and if necessary, the processing facilities must obtain the necessary modifications to existing air permits to accept the material from this removal action.

6. Section 6 and Section 6.2 - The existing dredged material processing facilities in the region have been designed to treat "typical NY/NJ Harbor sediments". Due to the significantly higher concentrations of pollutants in the sediments to be removed from this Removal Action, any processing facility that accepts this dredged material will have to submit to the Department for its approval a decontamination plan for the facility; this plan must be implemented upon completion of the processing of the dredged material from this project.

7. Section 6.2.2 -Barge Water Removal, Provisions for proper storage, treatment and testing of barge decant water is needed. It is expected that this water will require treatment prior to discharge to either a treatment facility or the LPR. Provisions for WWTP residuals disposal is also needed, as these may involve chemical-concentrated media.

8. Section 6.2.4, Stabilization – Control of contaminant emissions from this process need to be detailed in design documents.

9. Section 6.2.5, Material Storage – The location and infrastructure of this facility will have an impact on the type and degree of controls needed. Staged excavated materials are often a significant secondary source of air emissions and odors from a removal action, and depending on the contaminant levels and sediment characteristics, may require additional monitoring and controls.

10. Section 8.2, paragraph #1 - If the dredged material is stabilized, bench-scale testing results of COPC concentrations (and other required regulatory parameters) in the processed dredged material are needed to evaluate its suitability for disposal at off-site locations (proposed – an out-of-State landfill; see paragraph #2). Concentrations of some COPCs may increase as a result of stabilizing the dredged material with Portland cement.

11. Any new or existing dredged material processing facilities and/or placement site(s) proposed in the State of New Jersey to treat and/or dispose Passaic River dredged materials which are not part of the Passaic River Superfund Study Area (17 Mile Area) or the Newark Bay Study Area must be identified as in or outside of the Superfund Areas. If located outside of the Superfund Study Areas, said facilities shall be required to obtain new permits or modifications to existing permits including but not limited to (Air, Water, Coastal Zone, Flood Hazard, etc.) in order to receive dredged material and/or processed dredged material from this removal action.

12. Table 2-2, page 24, 40 CFR 61 - Volatilization of contaminants in the sediment may occur during dredging, transport, and stabilization. Measures to minimize any potential impacts to public health must be developed and implemented.

13. Table 2-2, NJAC 2:90 - The New Jersey soil erosion control standards may be applicable to any off-site staging areas.

14. Table 2-3, 40 CFR 2 6 302(g) - Portions of the Removal Area extend approximately halfway across the Passaic River. Thus, potential impacts to migratory fish (and the need for a dredging window) should not be dismissed.

15. Table 2-3, Endangered Species - NOAA and the USFWS must also be consulted.

16. Table 2-4 – The New Jersey Surface Water Quality criteria for all contaminants, not just those listed in Table 2-4, are applicable to the project.

17. Table 2-6, Submerged Vegetation Habitat - The presence/lack of SAV in the Removal Area must be determined. The potential impacts of any loss of SAV habitat as a result of the Removal Action and capping operation must be evaluated; the armored cap may not be re-vegetated by SAV.

18. Table 2-3 and Table 2-6, Flood Hazard Area Control Act (Applicable): The proposed cap and armored area is located within the flood way of the Passaic River. It is noted that final armor layer will consist of stone ranging from 4-7" in diameter. The use of this material may alter the roughness of the river bed and thereby change the dynamics of the river channel with respect to water flow and flooding. This matter should be addressed further and must be shown to have no adverse impact on up- or downstream flooding.

19. Table 2-3: The CZM Rules also require Tidelands ownership issues be addressed. No information has been provided with regard to Tidelands ownership of the subject dredging area. This issue requires further discussion among the regulatory agencies. NJDEP-ODST will coordinate this.

20. Table 2-3 lists various Land Use Rules including the Flood Hazard Area Control Act, Tidelands Act, and New Jersey Waterfront Development Law. However, this table does not state that the Coastal Zone Management Rules (N.J.A.C. 7:7E), Coastal Permit Program Rules (N.J.A.C. 7:7) are "APPLICABLE" as noted for other regulations, such as the Water Quality Certification (WQC). Note that WQCs are issued as part of the Waterfront Development Permit Equivalency process.